NON-PUBLIC?: N
ACCESSION #: 8712140086

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Callaway Plant Unit 1 PAGE: 1 of 4

DOCKET NUMBER: 05000483

TITLE: Reactor Trip on Low Steam Generator Level Oscillations Following Leaking Main Steam Isolation Valve Retest in Mode Not Allowed By Procedure
EVENT DATE: 11/08/87 LER #: 87-032-00 REPORT DATE: 12/08/87

OPERATING MODE: 2 POWER LEVEL: 001

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: M. E. Taylor, Superintendent - Operations TELEPHONE #: 314-676-8207

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On 11/8/87 at 0252 CST, a Reactor Trip, Feedwater Isolation and Auxiliary Feedwater actuation occurred as a result of low level in Steam Generator (S/G) 'B'. The plant was in Mode 2 - Startup, at approximately one percent reactor power. The Reactor Coolant System (RCS) temperature was 553.4 degrees F (average). RCS pressure was 2188.5 psig.

The low S/G level occurred as a result of S/G level oscillations following the retest of leaking Main Steam Isolation Valve (MSIV) 'B' at 0229. The licensed operators failed to follow the test procedure which required performance of the test only in Mode 3 - Hot Standby. Additionally, the 'B' Main Steam Dump Valve group was cycling due to a low control band. This magnified the perturbation of the test on the plant. Licensed operators were unable to stabilize the oscillations; the reactor tripped at 0252. The operators recovered from the trip via plant procedures and stabilized plant conditions by 0258.

To prevent recurrence, future similar MSIV retests will be performed in Mode 3. The leaking MSIV was repaired. The control band for the steam dump valve was corrected. Progressive discipline was initiated with the licensed operators involved. The event was also discussed with the operators to emphasize the need to review retest requirements.

(End of Abstract)

Basis For Reportability

On 11/8/87 at 0252 CST, a Reactor Protection System (RPS) reactor trip occurred due to the water level in Steam Generator (S/G)(1) 'B' decreasing to the lo-lo level trip setpoint of 23.5%. This Licensee Event Report is submitted pursuant to 10CFR50.73(a)(2)(iv) to report the automatic actuation of the RPS and the subsequent Engineered Safety Features(2) Actuations (Feedwater Isolation and Auxiliary Feedwater Actuation).

Conditions at Time of Event

Mode 2 - Start Up

Reactor Power - 8 x 10(-6) amps Intermediate Range

Reactor Coolant System (RCS)(3) temperature (average) - 553.4 degrees F pressure - 2188.5 psig

The plant was operating in the intermediate range at the point of adding heat (POAH). Engineering personnel had completed the reactor physics testing and licensed utility operators were borating the RCS to raise the reactor control rods(4) to above the Rod Insertion Limit (RIL).

Description of Events

On 11/7/87, during heat-up, there appeared to be a slight packing leak on Main Steam Isolation Valve (MSIV)(5) 'B' (AB-HV-
7). A Work Request was
generated to torque the packing to stop the leakage. AB-HV-17 was closed and declared inoperable pending retest via surveillance procedure
OSP-AB-V002B. Torquing the packing failed to stop the leakage. Even though it was felt that stroking the valve might stop the leak due to the live load packing, the retest was held pending completion of Reactor Physics testing.

Engineering personnel completed Reactor Physics testing at 0100 CST on 11/8/87. The operators planned to stroke test AB-HV-17 for operability but failed to realize that the initial conditions required by OSP-AB-V002B were Mode 3, Hot Standby with Main Steam pressure at 1100 plus or minus 50 psig.

At 0107, licensed operators opened all four MSIV bypass valves(6). At 0143, MSIVs 'A', 'C', and 'D' were slow-closed to prevent stress to the valves when

MSIV 'B' was fast closed for its retest.

At 0202, the 'B' Main Steam Dump Valve Group (AB-UV-35)(7) began to unexpectedly cycle open and close. 'B' S/G level decreased to approximately 35%. At 0206, the 'A' motor-driven (MD) Auxiliary Feedwater (AFW) pump(8) was started and 'B' S/G level was restored to its normal band. At 0224, the 'A' MD AFW pump was secured.

Operators slowly opened AB-HV-17 for retest OSP-AB-V002B. During the retest, at 0229, AB-HV-17 failed to fully close due to insufficient accumulator(9) hydraulic inventory. The test also caused all MSIV bypass valves to close.

At 0238, the MSIV bypasses were reopened. AB-HV-17 was slow opened for the retest.

AB-UV-35 steam dump continued to cycle. 'B' S/G level also began to oscillate above and below the high level setpoint (55%).

To minimize S/G level oscillations, operators took manual control of AB-UV-35 at 0246. Reactor power had increased to 1.3% (1 x 10(-5) amps) due to the AB-UV-35 oscillations. The operators began to slow open MSIVs 'A', 'C', and 'D' to equalize steam demand between the S/G's. S/G levels began to decrease because the steam demand exceeded the capacity of the startup feedwater pump for this power level.

At 0250, Loop 2 RCS Tave fell below 550 degrees F causing the steam dumps to close. MSIVs 'A', 'C', and 'D' were full open at 0251:15. With Tave below 551 degrees F, operators fast closed all four MSIVs.

At 0252:08, the resulting S/G oscillations caused 'B' S/G level to fall below the lo-lo level reactor trip setpoint of 23.5%. By design, a Feedwater Isolation and AFW actuation occurred following the RPS reactor trip.

Immediate Actions Taken

In accordance with plant procedures, licensed operators brought the plant to a stable shutdown condition by 0258.

Root Cause

The initial conditions of the retest procedure required the plant to be in Mode 3 for this retest. Due to familiarity with this test, the procedure was not referred to by the operators and the retest was performed in Mode 2 versus Mode 3. While this is acceptable technically, it is recognized that

steam plant perturbations at these power levels could significantly inhibit the ability of the operators to recover from the resulting transients prior to an RPS actuation. Therefore, the retest procedure requires Mode 3 performance.

The following are contributing factors to this event:

A. The 'B' MSIV (AB-HV-17) was leaking due to a scored valve stem.

B. AB-HV-17 had failed to fully close during the 0229 retest as the yellow train accumulator hydraulic inventory had not restored following the valve's slow opening.

C. The control band for steam dump group AB-UV-35 had drifted low, causing excessive cycling of the valves.

Corrective Actions and Actions to Prevent Recurrence

1. Future similar MSIV retests will be performed in Mode 3.

2. The plant was placed in Mode 5, Cold Shutdown, and the scored valve stem of AB-HV-17 was replaced. The control band for AB-UV-35, steam dump valve, was adjusted to prevent the excessive cycling.

3. Progressive discipline was initiated with the licensed operators involved with the failure to refer to the retest procedure. This event was discussed with the other licensed operators to emphasize the necessity to review retest requirements.

4. The insufficient MSIV hydraulic accumulator inventory restoration will undergo further evaluation.

Safety Significance

The safety features included in the plant design performed as required in response to the low S/G level and no detrimental effects on plant equipment occurred. Therefore, this event posed no threat to the public health and safety.

Previous Occurrences: While there have been previous reactor trips on low S/G levels, none have been attributable to the same equipment/plant conditions experienced during this event.

Footnotes

The system and component codes listed below are from IEEE Standards 805-1983 and 803A-1983, respectively.

(1) System - AB, Component - SG
(2) System - JE
(3) System - AB
(4) System - AA, Component - ROD
(5) System - SB, Component - ISV
(6) System - SB, Component - HCV
(7) System - SB, Component - XCV
(8) System - BA, Component - P
(9) System - SB, Component - ACC

UNION
ELECTRIC
Callaway Plant December 8, 1987

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ULNRC-1690

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 87-032-00
REACTOR TRIP ON LOW STEAM GENERATOR
LEVEL OSCILLATIONS FOLLOWING LEAKING MAIN STEAM
ISOLATION VALVE RETEST IN MODE NOT ALLOWED BY PROCEDURE

The enclosed Licensee Event Report is submitted pursuant to 10 CFR 50.73(a)(2)(iv) concerning an unplanned reactor trip on low Steam Generator level. The low level was due to oscillations resulting from a retest of a leaking main steam isolation valve.

/s/ ILLEGIBLE
for J. D. Blosser
Manager, Callaway Plant

TPS/MKD:jll

Enclosure
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Mr. A. Bert Davis Mr. Thomas Alexion (2 copies)
Regional Administrator Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission U. S. Nuclear Regulatory Commission
Region III 7920 Norfolk Avenue
799 Roosevelt Road Mail Stop P-316
Glen Ellyn, IL 60137 Bethesda, MD 20014

American Nuclear Insurers Mr. O. Maynard
c/o Dottie Sherman, Library Wolf Creek Nuclear Operating Corp.
The Exchange Suite 245 P. O. Box 411
270 Farmington Avenue Burlington, KS 66839
Farmington, CT 06032
Mr. Merlin Williams
Manager, Electric Department Supt. of Regulatory Quality &
Missouri Public Service Commission Administrative Services
P. O. Box 360 Wolf Creek Nuclear Operating Corp.
Jefferson City, MO 65102 P. O. Box 411
Burlington, KS 66839
Records Center
Institute of Nuclear Power Operations
Suite 1500
1100 Circle 75 Parkway
Atlanta, GA 30339

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